



VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the background of the invention:

Paragraph beginning at line 2 of page 1 has been amended as follows:

BACKGROUND OF THE INVENTION

[0002] The American public as a whole has become an increasingly mobile society and given their affinity for personalized vehicular modes of travel via automobiles, trucks, and SUVs', the sight of additional cargo in tow by trailer is a common one. Many of these commercial utility trailer products assume a variety of dimensions, shapes, and carrying capacities as set by their manufacturers. These conventional utility trailers are durable but burdensome due to their overall general preponderance. Because of the conforming manner of their construction, the typical utility trailer is unable to break down easily for suitable storage; thus often necessitating considerable space when not in use. Alternatively, if the utility trailer is cached outdoors, prolonged exposure to the elements may subject the unit to consequential wear and tear in excess of manufacturer recommendations. Thus, there is a need for a collapsible integrant to be particularly applicable within the utility trailer to provide ease of convenience when preparing for storage; yet able to retain the qualities of durability and weight carrying capacity as the conventional utility trailer.

VERSION WITH MARKINGS TO SHOW CHANGES MADE:

In the background of the invention:

Paragraph ending at line 3 of page 2 has been amended as follows:

[0003] Collapsible trailers are known in the art and are typically formed with a bed comprised of one rear portion and one front portion. The collapsible integrant of patent 5,607,176 to Leib and Thurm (1994) is capable of supporting great weights but is of limited portability when placed in its vertical, storing position. Secondly, this trailer although containing a support assembly to retain the unit in an upright position is somewhat burdensome when being placed in its storage position due to its high center of gravity. Consequently, the unit requires great care to disassemble for storage when not in use by the operator. Third, the trailer frame constructed, primarily for the transport of motorcycles, jet skis, and the like disassembles to the stowed size of approximately twenty-two inches deep and eighty inches high. These dimensions render the folded, stowed configuration a size undesirable to the typical consumer.

VERSION WITH MARKINGS TO SHOW CHANGES MADE:

In the background of the invention:

Paragraph beginning at line 4 of page 2 has been amended as follows:

[0004] U.S. patent 4,768,806 issued to Tetreault (1988) discloses a collapsible trailer having a platform comprised of two longitudinal sections, which fold against one another along a central axis. The procedure for folding and thus, storing the invention is initiated by the removal of a pin to fold the towing bar against its front flange. In addition, a complete removal of the front and rear panels, by the operator is essential in order that the trailer may be completely collapsed; then maneuvered back to a horizontal position on its wheels for storage.

VERSION WITH MARKINGS TO SHOW CHANGES MADE:

In the summary:

Paragraph beginning at line 13 has been rewritten as follows:

[0013] Generally speaking, in accordance with the present invention, the collapsible trailer comprises a platform having a first and second longitudinal hingeably mounted to a third central section. The platform is pivotable between an open position, wherein the two longitudinal sections join the third in the same plane, and in a closed position wherein the platform is in a folded relation and the longitudinal sections retract vertically in a side-by-side fashion. Furthermore, the various components of the trailer are adapted to be secured by flanges or by locking pins which enable the trailer to be stowed or opened without disassembly procedures thereby necessitating the use of tools.

VERSION WITH MARKINGS TO SHOW CHANGES MADE:

New abstract

ABSTRACT: A vehicular collapsible trailer comprising a platform (11) made of two longitudinal sections (28, 30) hingely mounted about a third central section (20). Front and rear flanges (16, 22) abut against the longitudinal sections and maintain the platform in its load carrying position. Two flanges (64A, 64B) along the distal ends of the longitudinal sections abut against central section to provide a folded trapezoid stowage position. Suspension joints (52) are fixed about the exterior edges of the longitudinal sections, and collapsible arms (82, 84) joined to axle (66) facilitate the platforms(') progression to open and closed positions. A permanent hub (70) and wheel assembly is mounted to each axle (end).

VERSION WITH MARKINGS TO SHOW CHANGES MADE

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In the detailed description-preferred embodiment

DETAILED DESCRIPTION-PREFERED EMBODIMENT

[0021] Referring to the Figures and in particular to FIG. 1, the trailer **10** comprises a platform **11** made up of a pair of longitudinal sections hingeably mounted about a third central axial section 20. Steel tubing may be employed for construction of the trailer sections and is the preferred material of the embodiment. A rear flange **22** is employed to hold the platform parallel during utility and is mounted horizontally to the distal end of the central section so that the ends of the flange may protrude past the width of the central section. A frontal flange 16 is adapted to contain two right and left apertures 18R and 18L and permit manual insertion of locking pins 12A and 12B through said flange and extending through the aligned apertures 24R and 24L of the central section 20. As illustrated in Figures 1,2, and 6, the front flange is additionally welded to a hitch **120** and is exercised to hold said hitch in an upright manner when said pair of locking pins affixed with their respective corresponding standard chains **13A** and **13B**, attached to said flange **16**, are inserted through these corresponding apertures. In addition, a frontal hinge **122** is coupled by welding to both the hitch **120** and the proximal end of the central section **20**. When the collapsible trailer is in the open (unfolded) position the flange **16** will reside atop central section **20** with this section disposed substantially between flange **16** and the hinge **122** as illustrated in FIG. 6. By incorporating such an assembly, trailer 10 is alleviated in the action of retaining the platform substantially parallel in its' load carrying position.

[0022] As illustrated in Figures 1 and 6, and specifically to FIG. 2, a set of longitudinal lateral sections **28** and **30** are constructed rectangularly of steel tubing and are considerably wider than said axial section **20** of the preferred embodiment. A pair of section hinges **26R** and **26L** are located proximately to the interior ledges of lateral sections **28** and **30** sandwiched between central section **20** and are affixed by welding; thereby connecting sections **28** and **30** to section **20**. The first and second hinge members **26L** and **26R** comprise a means for pivotally coupling the first and second sections **28**, **30** to the axial section **20**. Section hinges **26L** and **26R** are affixed in such a fashion that, when coupled, the lateral sections **28** and **30** will point downwardly at an angle curtailed of 180 degrees, thus facilitating an easier folding of the platform **11**. The first and second hinge members **26R** and **26L** permit the first and second **28**, **30** to be rotated relative to one another to allow the first and second sections assume 1) an open position wherein the first outer edge **48** is distal from the second outer edge **50** and the upper surfaces of the first, second, and third sections **28**, **30**, and **20** are substantially co-planar (as viewed in FIG. 1) and 2) a closed position wherein the first outer edge **48** is moved immediately closer and parallel to said second outer edge with the third axial section **20** disposed therebetween. (as shown in FIG. 2)

[0023] As shown in FIG. 1, an identical pair of cylindrical flanges **64A** and **64B** are welded ventrally to the distal ends of the sections **28** and **30**. These flanges are composed of standardized structural steel and are placed precisely adjacent to hinges **26L** and **26R**. As the trailer platform **11** collapses, the flanges **64A** and **64B** are unable to impede the movement of the hinges **26L** and **26R** but are able to procure a stopping point for the first and second sections **28** and **30**, as flanges **64A** and **64B**, are abutting against central section **20**. Figure 2, which illustrates a plan view of the collapsible trailer in the folded position, displays that the first **28**, second **30**, and third **20**, sections of the trailer bed form

as enclosure which is of a generally trapezoidal stowage form for ease in storage and handling. Again, at the rear end of the sections 28, 30 a set support members 44 and 46 are engaged to act as stops are welded to each said inner edge corner of these sections, and protruding externally to lie flush with the distal end of rear flange 22. Furthermore, these said support members act in consort with the rear flange 22 to stabilize the platform 11 in a parallel, load-bearing position during trailer use.

[0024] Referring again to FIG. 1 each lateral longitudinal section of the trailer assembly is provided with a pair corresponding floor supports 28A, 28B, 30A, and 30B welded atop each section 28, 30 at the locations 32, 34, 36, and 38. These floor support members extend downwardly from the underside of the flooring and function to provide additional structural integrity to platform 11. Flooring for this trailer bed is not considered to fall within the scope of this disclosure, however the choice would be left to the manufacturer of the device.

[0025] As viewed in FIG. 1, a first and second suspension means are illustrated regarding the trailer in its expanded configuration. Located at the exterior edges of the first and second lateral section 48 and 50, the suspension means for the trailer is comprised of: rotating suspension joints 52R and 52L, a "double" first and second leaf spring, 56 and their respective spring hangers 62A and 62B . As viewed in the frontal view of a singular axle assembly as seen in FIG. 3, the suspension joint 52R is comprised of steel tubing which has been configured for an insertable, telescopic fit around the exterior, circular edge of the right bed section 28. The dual set of suspension joints 52R and 52L are disposed on transverse relation to floor supports 28A, 28B, 30A, and 30B of each lateral section. As viewed in FIG. 1 of the instant invention, the suspension joints 52R and 52L are constructed to be fixed flush between the floor support members and the first and second

bed sections, thereby preventing said suspension joint a non-actuated progression outside the floor support members.

[0026] A key feature of the present invention is the means by which the axle assemblies are pivotal between stowed and open positions without need of disassembly. In the preferred embodiment of the invention, the trailer utilizes a straight axle design, adapted to and modified from its' original construction as a common axle joining one wheel to the other. In the preferred embodiment the first and second stationary sections of the axle are comprised of a straight axle type commonly chosen to be affixed in a relation disposed beneath the leaf springs. Those skilled in the art should find it apparent that the remaining constituent elements connected to the said axle assemblies; including the leaf springs in combination with their spring brackets, wheel assemblies and their hubs, are comprised of typical conventional components of general vehicular/trailer use and are readily available.

[0027] As singularly illustrated in Figures 3 and 4, the first axle assembly means is comprised of three main elements: a first wheel assembly combined with a hub **70**, a stationary section of the axle **72** and a collapsible arm **84**. The stationary section is comprised of a square hollow tube which in turn, a leaf spring **56** may be bracketed to the center of said section **72** of the axle. Secondly, the leaf spring is then attached to the tubing **60** of the rotating suspension joint via its respective spring hangers **62A** and **62B**. The basal location of the leaf spring **56** is then bolted by means of a standard mounting bracket **68** to section **72** of the axle. Referring to FIGS. 3 and 4, the hub **70** and wheel suspension means, upon which the wheel (not shown) is to be bolted resides at the distal end of the

stationary axle section **72**. As represented in FIG. 5, directly upon area **78** at section **72** is a perpendicularly mounted central kingpin **80**, which in turn passes through the axle assembly at section **72**. Referring to the exploded view of FIG. 5., first **84** and second **82** collapsible arms each include an identical aperture each include an identical aperture **86**, at their distal ends and an additional pair of identical, smaller apertures **74A** and **74B**, located at point **75**, respectively. The first and second arms **84** and **82** are made up of solid, elongated steel, each arm having a length approximately equal to two-thirds platform **11** width. It should be noted that the platform width is calculated by utilizing both sections **28** and **30** and the central section **20** combined. The distal ends of each arm **82** and **84** connect central kingpin **80** within the stationary sections **72** of each axle assembly by passing through an aperture **86**. Each arm **82** and **84** have a bolted "L" shaped flange **88** containing identical corresponding apertures **90** at their proximal ends and also have two smaller identical apertures **92A** and **92B** located at the base end of this flange **88**.

[0028] Referring again to FIG 5, the flange **88** is mounted by two varied means at two different locations. It is permanently coupled at the proximal end of the flange by utilizing a corresponding bolt pair **94A** and **94B**, which are inserted through apertures **74A** and **74B** upon the said first and second arms, terminating through apertures **92A** and **92B** upon said flange. Secondly, the "L" shaped flange is pivotally mounted at its distal end by first inserting kingpin **80** through aperture **86** then ending at aperture **90** located distally upon flange **88**.

[0029] Located at the frontal end of the right arm **84**, an aperture **96** permits the insertion of a kingpin **98**. This kingpin is mounted on a rectangular flange **100** projecting from the base of said left arm. In addition, a mounting bracket **102** comprised of solid metal contains

an aperture **104** and pair of aligned, smaller apertures **106A** and **106B** as seen in FIG. 5. Aperture **104** receives the kingpin **98** and thus bracket **102** affixes to the left second arm **82** using bolts **110A** and **110B** through corresponding apertures **106A** and **106B** and finishing within apertures **108A** and **108B** located upon the frontal end of the left arm **82**.

[0030] As shown in FIG 3, which is a frontal view of axle assembly, the inventor has included a pair of pulleys **112A** and **112B** to be connected by welding at the interior hollow areas of each stationary axle section **72**. As illustrated in FIGS. 1 and 2 a cable **114** is joined with a conventional winch **116** at its proximal end. Conversely, the said cable is affixed to a stationary section **72** by means of an aperture **118**, illustrated in FIG 5, located at the distal end of the cable **114**. The cable is then threaded through the pulleys in a standard "block and tackle" formation. Referring to FIG. 6, a winch **116** is mounted to the approximate midsection point of a standard hitch **120**.

Operation—Figures 1, 2, and 6

[0031] Operation of the trailer will now be discussed in connection with FIGS. 1, 2, and 6 beginning with storage of the trailer as shown in FIG. 2. The trailer **10** is stored in the collapsed position horizontally to attain the stowage position in a trapezoidal shape. The rotating suspension joints **52R** and **52L** and the collapsible arms **82** and **84** each work in consort to retain the stationary sections **72** of the axle assembly in their respective perpendicular and parallel planes, be they is stowed or open configuration. Furthermore, the trailer **10** need not be supported by any other devices such as casters, support beams, or the like, but will be maintained by its' own permanently coupled axle assembly: a feature not provided for in the prior art.

[0032] In addition, a substantial conservation of space is provided in this folded position. When the collapsible trailer **10** is moved into its storage position as illustrated at FIG. 2, the trailer is only approximately thirty-six inches high and less than 36 inches deep: varying measurements of width and height being only applicable accordingly with the tires (not shown) chosen by the manufacturer of the device.

[0033] To utilize trailer **10**, the device is rolled from storage and the hitch **120** is raised in the direction of arrow A of FIG. 6 so that the hitch is rotated to an approximately ninety-degree angle. As illustrated in FIG. 2 Pin set **12A** and **12B** are inserted through the front flange **16** through corresponding apertures **18R** and **18L** ending through apertures **24R** and **24L** (not shown) of the third central axial section **20**. Winch **116** is then manipulated to sufficiently release the tension of cable **114**, thereby affording opportunity of platform **11** to unfold downwardly. Secondly the operator need only grapple the wheel (not shown) or an outer edge of either lateral section **48** or **50** and draw directly away from the center section **20** in order to direct trailer **10** to its load bearing, utility position as illustrated in FIG. 1. First and second arms **82** and **84** expand to retain the hubs **70** in their respective perpendicular planes during which rotating suspension joints **52** and **54** permit lateral sections **28** and **30** to rotate vertically within tubing **60** to a descent appropriate for utility. By the same accord, section hinges **26R** and **26L** flex to allow the sections **28** and **30** to move to an extreme open position, abutting rear flange **22**, at central section **20**, wherein the surfaces of adjoining sections **20**, **28**, and **30** are substantially coplanar and ready for use, as illustrated in FIG. 1.

[0034] Referring to FIG.2 and 6, in order to fold trailer **10**, the operator need only crank winch **116**, mounted to a standard hitch **120**, resulting subsequently in a drawing of a cable **114** applying a taut force to the previously noted "block and tackle" formation

comprised of pulleys **112A** and **112B**. This motion will result in sufficient pressure required to draw axle sections **72**, to a side by side proximity. At the same intervening time, collapsible arms **82** and **84** are compressed to permit movement of hubs **70**, and their corresponding stationary sections **72**, respectively.

[0035] It should be noted that the inventor has stipulated that section hinges **26R** and **26L** be affixed in such a manner as to allow both sections **28** and **30** to point downwardly at an angle of approximately 175 degrees, thus ensuring that an upward ascent of force will be employed when drawing cable **114**. In construction it has been found that if section hinges **26R** and **26L** were joined to said first and second sections **28** and **30** and thereby retaining the platform **11** in a coplanar horizontal angle of 180 degrees would subsequently render undesirable force to the outer edge of said central section **20** of trailer **10**. The cable **114** when drawn would apply considerable pressure to the exterior central section **20** and would therefore be unable to engage hinges **26R** and **26L**, and consequently be unable to permit movement of lateral sections **28** and **30**.

[0036] As the arms **82** and **84** are compressed, axial section **20** ascends as rotating suspension joints **52R** and **52L** allow sections **28** and **30** movement via tubing **60** to a suitable position for trailer **10** stowage position as seen in FIG. 2. Cylindrical flanges **64A** and **64B** abut central section **20**, thus stopping first and second sections **28** and **30** as they travel to the storage position. Referring to FIGS. 2 and 6 the operator then removes pins **12A** and **12B** from front flange **16** and lowers hitch **120**. Trailer **10** may then be readied for stowage by wheeling the unit to its desired storage area, garage, or the like.

Conclusions, Ramifications, and Scope

[0037] Thus the reader will see that the collapsible integrant of the trailer provides a highly reliable, easily storable, yet convenient and durable platform which may be quickly and easily collapsed for storage. Furthermore the trailer has additional advantages in that

- . it permits the production of collapsible trailers in a variety of sizes whose platform is capable of sustaining great weights;
- . it allows the trailer to be collapsed for storage without the need to detach various panels, wheel assemblies, or the like and consequently sacrifice ease of use by a consumer; and
- . it provides a trailer with a superior platform upon which one may transport cargo items of ponderous size yet whose platform is able to provide a substantial conservation of space when stowed.

[0038] While the above description contains much specificity, these should not be construed as limitations on the application of the invention, but rather as an illustration by example of one preferred embodiment thereof. Several other variations are possible. For example, the above embodiment utilizes two longitudinal sections hingely mounted to a third central section. This is by of means example and the invention functions equally as well utilizing as few as two sections without the third central section. Additionally, the collapsible trailer may also be constructed as a doubled or tripled axle design in consort with their respective arms, not just a single axle design used by way of example. Lastly, the trailer may be easily converted to accommodate ramps or a back gate providing these are affixed sectionally so as not to impede operation of the embodiment.

[0039] It will be accordingly seen that the objects stated forth above, among those made apparent from the preceding description, are attained and, since particular alterations may be made to the above description without departing from the scope of the invention, it is

intended that all matter within the above description or illustrated in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

[0040] It is also understood that the scope of the invention should be determined not only by the embodiment as illustrated but the appended claims and their legal equivalents.

VERSION WITH MARKING TO SHOW CHANGES MADE:

IN THE CLAIMS:

Please substitute claim 1 as follows: (substituted)

[C001] 1) A collapsible trailer comprising:

- a) a pair of longitudinal bed sections having inner and outer edges,
a central bed section,
said pair of longitudinal bed sections and said central bed section forming a platform for supporting objects thereon wherein each of said inner edges of said longitudinal bed sections form a longitudinal pivot axis, and wherein each of said longitudinal bed sections and said central bed section are pivotally interconnected by a hinge member co-located with said longitudinal pivot axis; and
whereby said platform has an open position and closed position; wherein when said pair of longitudinal bed sections and said central bed section are in said open position all said sections are substantially co-planar and (2) wherein when said pair of longitudinal bed sections and said central bed section are in said closed position all said sections form a box-like enclosure, said box-like enclosure being generally trapezoidal,
- b) a suspension means interconnected to said outer edges of said pair of longitudinal bed sections and a axle assembly for enabling selective movement of said outer edges of said pair of longitudinal bed sections between said open position and said closed position.

Please substitute claim 2 as follows: (substituted)

[C002] 2) A collapsible trailer as recited in claim 1, wherein said suspension means comprises:

- a) a suspension joint axially aligned and disposed around each said outer edge for enabling vertical rotation of said longitudinal bed sections; and

and generally parallel to the ground,

a axle assembly,

said pair of longitudinal bed sections and said center bed section forming a platform for supporting objects thereon, said pair sections said central section being pivotally interconnected by a hinge means said inner edges thereof and extending along said central section and forming a longitudinal pivot axis therebetween; and

longitudinal bed section having a upper surface, a lower surface, an inner edge, an outer edge, a first means for joining a suspension assembly to said longitudinal bed sections, said joining means located proximate said outer edges; and

means pivotally coupling said longitudinal sections to said central section, said coupling means located proximate said inner edges, said longitudinal sections thereby capable of assuming (1) said open position wherein said upper surfaces and said central section are substantially co-planar and (2) said closed position wherein said outer edges are closer relation and generally below said central section and said axle assembly disposed therebetween,

a pair of wheel assemblies mounted to said axle assembly for supporting said trailer in said open and closed positions,

- b) a suspension means interconnected to said outer edges and said axle assembly for enabling movement of said outer between said open position and said closed position.

- b) a leaf spring attached below said outer edges said leaf spring having a top and a base,
- c) a plurality of spring hangers securing each said top disposed underneath said joint, said leaf spring secured to said axle at said leaf spring base.

Please substitute claim 3 as follows: 3. (substituted)

[C003] 3) The suspension joint as recited in claim 2 further comprising a tubular member, said tubing and said outer edge being complimentary configured for enabling sliding telescopic reception of one said outer edge and said tubing into the other of said outer edge and for establishment of a rotatable connection therebetween.

Please substitute claim 4 as follows: 4. (substituted)

[C004] 4) A collapsible trailer as recited in claim 1, wherein said hinge member is a single elongated hinged defining an opposed pair of said bed sections said hinge being secured by welding to each said section.

Please substitute claim 5 as follows: 5. (substituted)

[C005] 5) A collapsible trailer as recited in claim 1, wherein said platform is structurally maintained by a plurality of support members, said suspension joint contiguous to said outer edge and said members.

Please substitute claim 6 as follows: 6. (substituted)

[C006] 6) A collapsible trailer comprising:

- a) a pair of longitudinal bed sections having an inner edge and outer edge,
a central bed section positioned between said pair of longitudinal bed sections